AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listing, of claims in the application.

Listing of Claims:

1. (Currently amended) A ~~single stage coffee bean heat treatment and grinding~~ process for concurrently drying, roasting, and grinding green coffee beans in a single unit operation, comprising:

introducing compressed heated air into an enclosure that includes a truncated conical shaped section, wherein the heated air spirals along a downward path through the enclosure, including the conical section, to a lower end thereof, and the heated air reaching the lower end flows back up and exits the enclosure via an exhaust outlet;

introducing into the enclosure green coffee beans which are entrained in the heated air spiraling downward through the enclosure, wherein at least a portion of the green coffee beans are concurrently dried, roasted to induce pyrolysis, and ground in a single unit operation before reaching the lower end of the enclosure; and

discharging a solid particulate product including dried, roasted and ground coffee beans from the lower end of the enclosure.[[,]]

~~whereby the dried, roasted and ground coffee beans are obtained from the green coffee beans in a single stage~~.

2. (Original) The process of claim 1, wherein the green coffee beans contain about 25 wt.% to about 35 wt.% moisture when introduced; and the dried, roasted and ground coffee beans contain about 3 wt.% to about 5 wt.% moisture.

3. (Original) The process of claim 1, wherein the ground coffee beans have an average particle size of about 0.1 mm to about 4 mm.

4. (Original) The process of claim 1, wherein the solid particulate product comprises at least about 50% ground coffee beans have an average particle size of about 0.1 mm to about 1 mm.

5. (Original) The process of claim 1, wherein the introducing of the heated air comprises supplying compressed heated air at a pressure within the range of from about 10 psig to about 100 psig.

6. (Original) The process of claim 1, wherein the introducing of the heated air comprises supplying compressed heated air at a pressure within the range of from about 15 psig to about 60 psig.

7. (Original) The process of claim 1, wherein the introducing of the heated air comprises supplying the heated air at a temperature within the range of about 300°F to about 500°F.

8. (Original) The process of claim 1, wherein the introducing of the heated air comprises supplying the heated air at a temperature within the range of about 375°F to about 425°F.

9. (Original) The process of claim 1, wherein the introducing of the heated air comprises supplying the heated air at a rate of within the range of from about 1,000 cubic feet per minute to about 10,000 cubic feet per minute.

10. (Original) The process of claim 1, wherein the introducing of the heated air comprises supplying the heated air at a rate within the range of from about 1,500 cubic feet per minute to about 3,000 cubic feet per minute.

11. (Original) The process of claim 1, further comprising screening the discharged solid particulate product; collecting ground coffee beans in the solid particulate product having particle sizes less than a predetermined size; and

re-introducing coffee beans in the solid particulate product having particle sizes as large as or more than the predetermined size into the upper enclosure.

12. (Previously presented) The process of claim 1, wherein the lower end of the enclosure communicates with a rotary air-lock valve permitting discharge of solid particulate product from the enclosure.

13. (Original) The process of claim 1, further comprising exhausting moisture vapor released from the coffee beans during drying and roasting via the exhaust outlet.

14. (Currently amended) A ~~single-stage coffee bean heat treatment and grinding~~ process for concurrently drying, roasting, and grinding green coffee beans in a single unit operation grinding, comprising:

introducing compressed heated air into an upper cylindrical enclosure wherein the heated air spirals along a downward path through the upper enclosure and into an adjoining lower enclosure having a truncated conical shape and a lower end, and the heated air flows back up and exits the upper enclosure via an exhaust outlet;

introducing into the upper enclosure green coffee beans which are entrained in the heated air spiraling downward through the upper and lower enclosures, wherein at least a portion of the green coffee beans are concurrently dried, roasted to induce pyrolysis, and ground in a single unit operation before reaching a lower end of the lower enclosure; and

discharging a solid particulate product including dried, roasted and ground coffee beans from the lower end of the lower enclosure.[[,]]

~~whereby the dried, roasted and ground coffee beans are obtained from the green coffee beans in a single stage.~~

15. (Original) The process of claim 14, wherein the green coffee beans contain about 25 wt.% to about 35 wt.% moisture when introduced; and the dried, roasted and ground coffee beans contain about 3 wt.% to about 5 wt.% moisture.

16. (Original) The process of claim 14, wherein the ground coffee beans have an average particle size of about 0.1 mm to about 4 mm.

17. (Original) The process of claim 14, wherein the solid particulate product comprises at least about 50% ground coffee beans have an average particle size of about 0.1 mm to about 1 mm.

18. (Original) The process of claim 14, wherein the introducing of the heated air comprises supplying compressed heated air at a pressure within the range of from about 10 psig to about 100 psig.

9. (Original) The process of claim 14, wherein the introducing of the heated air comprises supplying compressed heated air at a pressure within the range of from about 15 psig to about 60 psig.

20. (Original) The process of claim 14, wherein the introducing of the heated air comprises supplying the heated air at a temperature within the range of about 300°F to about 500°F.

21. (Original) The process of claim 14, wherein the introducing of the heated air comprises supplying the heated air at a temperature within the range of about 375°F to about 425°F.

22. (Original) The process of claim 14, wherein the introducing of the heated air comprises supplying the heated air at a rate of within the range of from about 1,000 cubic feet per minute to about 10,000 cubic feet per minute.

23. (Original) The process of claim 14, wherein the introducing of the heated air comprises supplying the heated air at a rate within the range of from about 1,500 cubic feet per minute to about 3,000 cubic feet per minute.

24. (Original) The process of claim 14, further comprising screening the discharged solid particulate product; collecting ground coffee beans in the solid particulate product having particle sizes less than a predetermined size; and re-introducing coffee beans in the solid particulate product having particle sizes as large as or more than the predetermined size into the upper enclosure.

25. (Original) The process of claim 14, wherein the introducing of the heated air into the upper cylindrical enclosure occurs in a direction oriented generally tangentially to inner walls of the cylindrical enclosure.

26. (Previously presented) The process of claim 14, wherein the lower end of the lower enclosure communicates with a rotary air-lock valve permitting discharge of solid particulate product from the lower enclosure.

27. (Original) The process of claim 14, wherein the upper cylindrical enclosure has a substantially constant diameter of about 1 to about 10 feet, and the lower enclosure comprises a truncated conical shape having a maximum diameter size where the lower enclosure adjoins the cylindrical enclosure and the maximum diameter of the lower enclosure is substantially the same as the diameter of the cylindrical enclosure.

28. (Original) The process of claim 14, further comprising exhausting moisture vapor released from the coffee beans during drying and roasting via the exhaust outlet.